

## PATENT COOPERATION TREATY

REQUEST FOR COPY

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C.20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 15 September 2000 (15.09.00)	
International application No. PCT/US99/31246	Applicant's or agent's file reference ACR6100WO
International filing date (day/month/year) 30 December 1999 (30.12.99)	Priority date (day/month/year) 31 December 1998 (31.12.98)
Applicant MIRVISS, Stanley, B. et al	

1. The designated Office is hereby notified of its election made:

 in the demand filed with the International Preliminary Examining Authority on:

20 June 2000 (20.06.00)

 in a notice effecting later election filed with the International Bureau on:2. The election  was was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  Pascal Piriou  Telephone No.: (41-22) 338.83.38
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : <b>C09K 3/22, C11D 3/02, C07C 211/00, 303/00</b>		A1	(11) International Publication Number: <b>WO 00/39241</b> (43) International Publication Date: <b>6 July 2000 (06.07.00)</b>
<p>(21) International Application Number: <b>PCT/US99/31246</b></p> <p>(22) International Filing Date: <b>30 December 1999 (30.12.99)</b></p> <p>(30) Priority Data: 60/114,544 31 December 1998 (31.12.98) US</p> <p>(71) Applicant (for all designated States except US): <b>AKZO NOBEL N.V. [NL/NL]; P.O. Box 9300, NL-6824 BM Arnhem (NL).</b></p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): <b>MIRVISS, Stanley, B. [US/US]; 90 Surrey Road, Stamford, CT 06903 (US). STEICHEN, Dale [US/SE]; Makrillgatan 33, S-426 58 Vastra Frolunda (SE). SPELLANE, Peter, J. [US/US]; 100 West Ardsley Avenue, Ardsley-on-Hudson, NY 10503 (US). CHO, Hee [CN/US]; 5 Lenny Court, Wappinger Falls, NY 12590 (US).</b></p> <p>(74) Agent: <b>MANCINI, Ralph, J.; Akzo Nobel Inc., Intellectual Property Dept., 7 Livingstone Avenue, Dobbs Ferry, NY 10522-3408 (US).</b></p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</p>	
<p>(54) Title: <b>CATIONIC GEMINI AND RELATED MULTIPLE HYDROPHILIC/HYDROPHOBIC FUNCTIONAL COMPOUNDS AND THEIR USE AS SURFACTANTS</b></p> <div style="text-align: center;"> </div> <p>(57) Abstract</p> <p>A compound of general formula (I), (II), or (III): wherein each of R<sub>1</sub> through R<sub>20</sub> are independently selected from straight or branched chain, substituted or unsubstituted C<sub>1</sub>–C<sub>22</sub> alkyl or alkenyl groups, wherein said alkyl or alkenyl groups optionally contain at least one ester linkage, at least one amide linkage, or mixtures thereof; A is a space group of formula (1) or (2), (3) or an amide group; and X<sub>1</sub> and X<sub>2</sub> are the same or different and are selected from C<sub>1</sub>–C<sub>22</sub> substituted or unsubstituted alkyl, C<sub>1</sub>–C<sub>22</sub> substituted, or unsubstituted alkenyl wherein said alkyl or alkenyl group optionally contain at least one ester linkage; and wherein in each of formula (I), (II) and (III), Z is an anion, with the proviso that R<sub>15</sub> and R<sub>20</sub> are not the same. The invention also relates to a compound of formula (IV) wherein R<sub>21</sub>, R<sub>22</sub>, R<sub>23</sub>, R<sub>24</sub>, R<sub>25</sub>, R<sub>26</sub>, R<sub>27</sub>, and R<sub>28</sub> are the same or different and are selected from straight or branched chain, substituted, or unsubstituted C<sub>1</sub>–C<sub>22</sub> alkyl or alkenyl groups, wherein said alkyl or alkenyl groups optionally contain at least one ester linkage, at least one amide linkage or mixtures thereof, and where x and y are each independently an integer of from 1–20, n is greater than 1 and Z is an anion, and to processes for preparing these compounds.</p>			

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/31246

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :C09K 3/22 ; C11D 3/02; C07C 211/00, 303/00  
US CL : 252/131; 510/522; 560/12; 564/281, 295, 296

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 252/131; 510/522

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CAS ONLINE: structural search, West: ore flotation aid, viscosity modify\$3, surfactant, mono-quaternary ammonium.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US Re. 34,062 A (WELLS) 15 September 1992, col. 3, lines 13-57.	1-6, 15-16, 19-21, and 29-30

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input type="checkbox"/>	See patent family annex.
•	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"B"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
10 MAY 2000	13 JUN 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer <i>R. Mether Lawrence Jr.</i> T. VICTOR OH
Facsimile No. (703) 305-3230	Telephone No. (703) 308-1235

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US99/31246

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-6, 15-24, 29-30

**Remark on Protest**  

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US99/31246

**BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING**

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s) 1-6, 15-24, and 29-30, drawn to quaternary ammonium salt compounds and surfactant composition.  
Group II, claim(s) 7-14, drawn to a process for preparing the multiple functional quaternary ammonium compounds.  
Group III, claim(s) 25-28 and 31-32, drawn to a process of preparing the polyaminoalkyl compounds and their compounds and surfactant composition.

The inventions listed as Groups do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group I is related to quaternary ammonium salt compounds and its surfactant composition while Group II is drawn to a process for preparing the multiple functional quaternary ammonium compounds via producing an intermediate such as dialkylalkanol amine. The quaternary ammonium salt compounds and its surfactant composition are well-known in the art as shown US Re 34,062. Group II is not special technical feature required in the making of quaternary ammonium salt compounds and its surfactant composition. Furthermore, Group III is directed to the invention of the compounds different from Group I and the process of making the compounds and surfactant composition.

Therefore, there is no single general inventive concept and no unity of invention for the process or the claimed compounds as defined in 37 CFR 1.475.

37 CFR 1.475 states that a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combination of categories:

- a. A product and a process specially adapted for the manufacture of said product; or
- b. A product and a process of use of said product; or
- c. A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or
- d. A process and an apparatus or means specially designed for carrying out the said process; or
- e. A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specially designed for carrying out the said process.

3. During a telephone conversation with Ralph J. Mancini on 5/4/2000 a provisional election was made with traverse to prosecute the invention of Group I, Claims 1-6, 15-24, and 29-30. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-14, 25-28, and 31-32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: RALPH J. MANCINI  
AKZO NOBEL INC.  
INTELLECTUAL PROPERTY DEPARTMENT  
7 LIVINGSTON AVENUE  
DOBBS FERRY, NY 10522-3408

## PCT

### NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

<p>Applicant's or agent's file reference ACR6100WO</p>		<p>Date of Mailing (day/month/year) <b>03 MAY 2001</b></p>	
<p><b>IMPORTANT NOTIFICATION</b></p>			
<p>International application No. PCT/US99/31246</p>	<p>International filing date (day/month/year) 30 DECEMBER 1999</p>	<p>Priority Date (day/month/year) 31 DECEMBER 1998</p>	
<p>Applicant MIRVISS, STANLEY B.</p>			

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

<p>Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231</p> <p>Facsimile No. (703) 305-3230</p>	<p>Authorized officer A. VICTOR OH <i>Dorothy Lawrence</i> <i>T</i> Telephone No. (703) 308-1235</p>
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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
**(PCT Article 36 and Rule 70)**

Applicant's or agent's file reference  ACR6100WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No.  PCT/US99/31246	International filing date (day/month/year)  30 DECEMBER 1999	Priority date (day/month/year)  31 DECEMBER 1998
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant MIRVISS, STANLEY B.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>7</u> sheets.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>0</u> sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input checked="" type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>
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Date of submission of the demand  05 JUNE 2000	Date of completion of this report  06 APRIL 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231  Facsimile No. (703) 305-3230	Authorized officer   T. VICTOR OH  Telephone No. (703) 308-1235

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

 the international application as originally filed the description:pages 1-23, as originally filed  
pages NONE  
pages NONE, filed with the demand the claims:pages 24-31, as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages NONE, filed with the demand  
pages NONE, filed with the letter of the drawings:pages NONE, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of the sequence listing part of the description:pages NONE, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in printed form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4.  The amendments have resulted in the cancellation of: the description, pages none the claims, Nos. none the drawings, sheets/fig none5.  This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been and will not be examined in respect of:

the entire international application.

claims Nos. 7-14, 25-28, 31-32

because:

the said international application, or the said claim Nos.   relate to the following subject matter which does not require international preliminary examination (*specify*).

the description, claims or drawings (*indicate particular elements below*) or said claims Nos.   are so unclear that no meaningful opinion could be formed (*specify*).

the claims, or said claims Nos.   are so inadequately supported by the description that no meaningful opinion could be formed.

no international search report has been established for said claims Nos. 7-14, 25-28, 31-32.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

the written form has not been furnished or does not comply with the standard.

the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

Novelty (N)	Claims	<u>none</u>	YES
	Claims	<u>1-6, 15-24, and 29-30</u>	NO
Inventive Step (IS)	Claims	<u>none</u>	YES
	Claims	<u>1-6, 15-24, and 29-30</u>	NO
Industrial Applicability (IA)	Claims	<u>1-6, 15-24, and 29-30</u>	YES
	Claims	<u>none</u>	NO

**2. citations and explanations (Rule 70.7)**

Claims 1-6, 15-24, and 29-30 lack novelty under PCT Article 33(2) as being anticipated by Wells (Re 34,062).

Wells discloses a fabric softening composition containing water-soluble cationic surfactants such as the derivatives of quaternary ammonium salt compounds (see col. 3 ,lines 10-50), which give viscoelastic products(see col. 2 ,lines 39-41). These compounds are identical to the claimed compounds.

----- NEW CITATIONS -----

NONE

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

The description is objected to as containing the following defect(s) under PCT Rule 66.2(a)(iii) in the form or contents thereof: in the abstract, the symbol "n" in the general formulas I, II, and III is not defined. An appropriate correction is required.

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 1 is objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because the claim 1 is indefinite for the following reason(s): the "n" symbol in the general formulas I, II, and III is not defined in the claim. An appropriate correction is required.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/31246

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**CLASSIFICATION:**

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): C09K 3/22 ; C11D 3/02; C07C 211/00, 303/00 and US Cl.: 252/131; 510/522; 560/12; 564/281, 295, 296

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